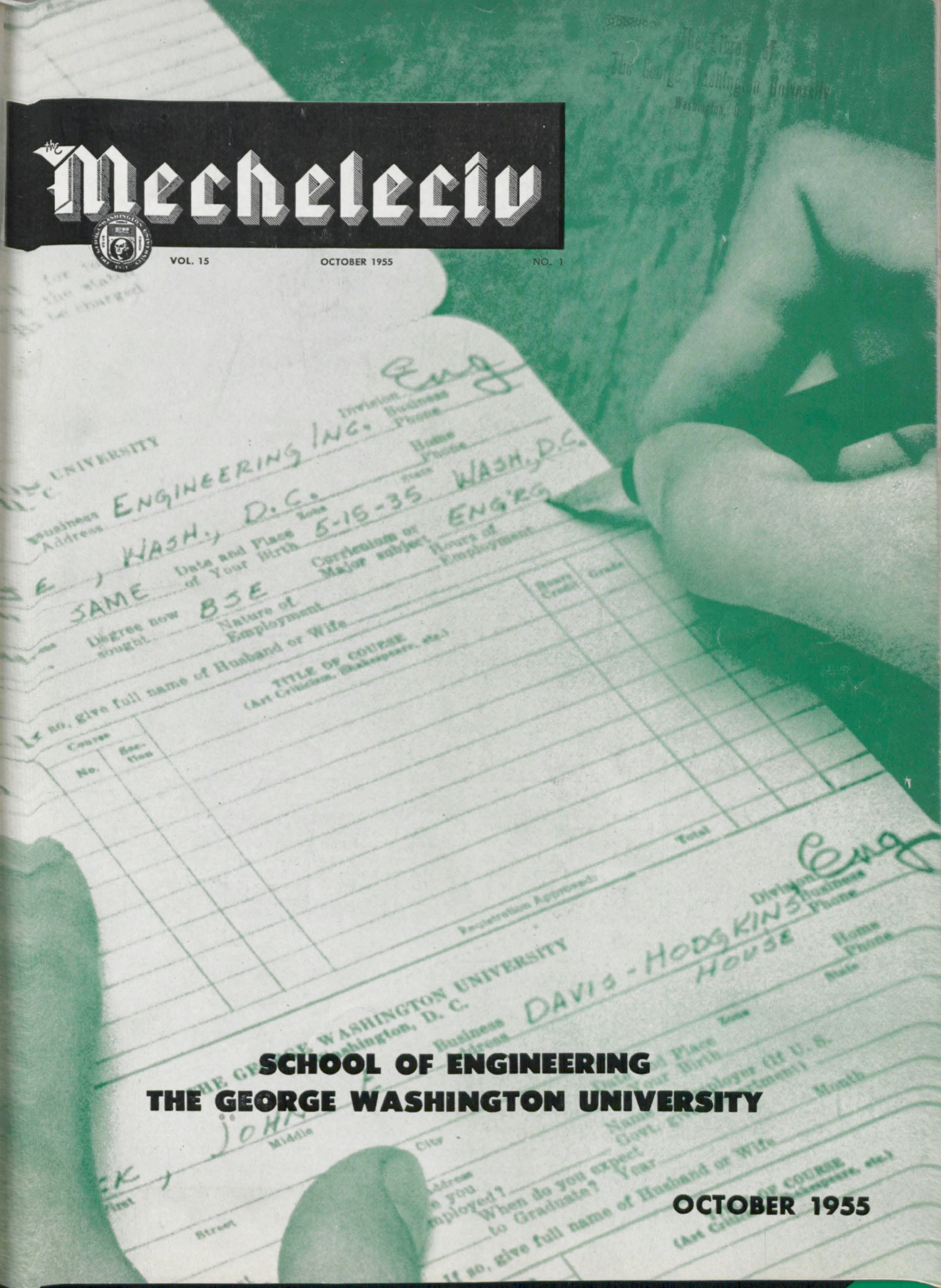


The Mechelectiv

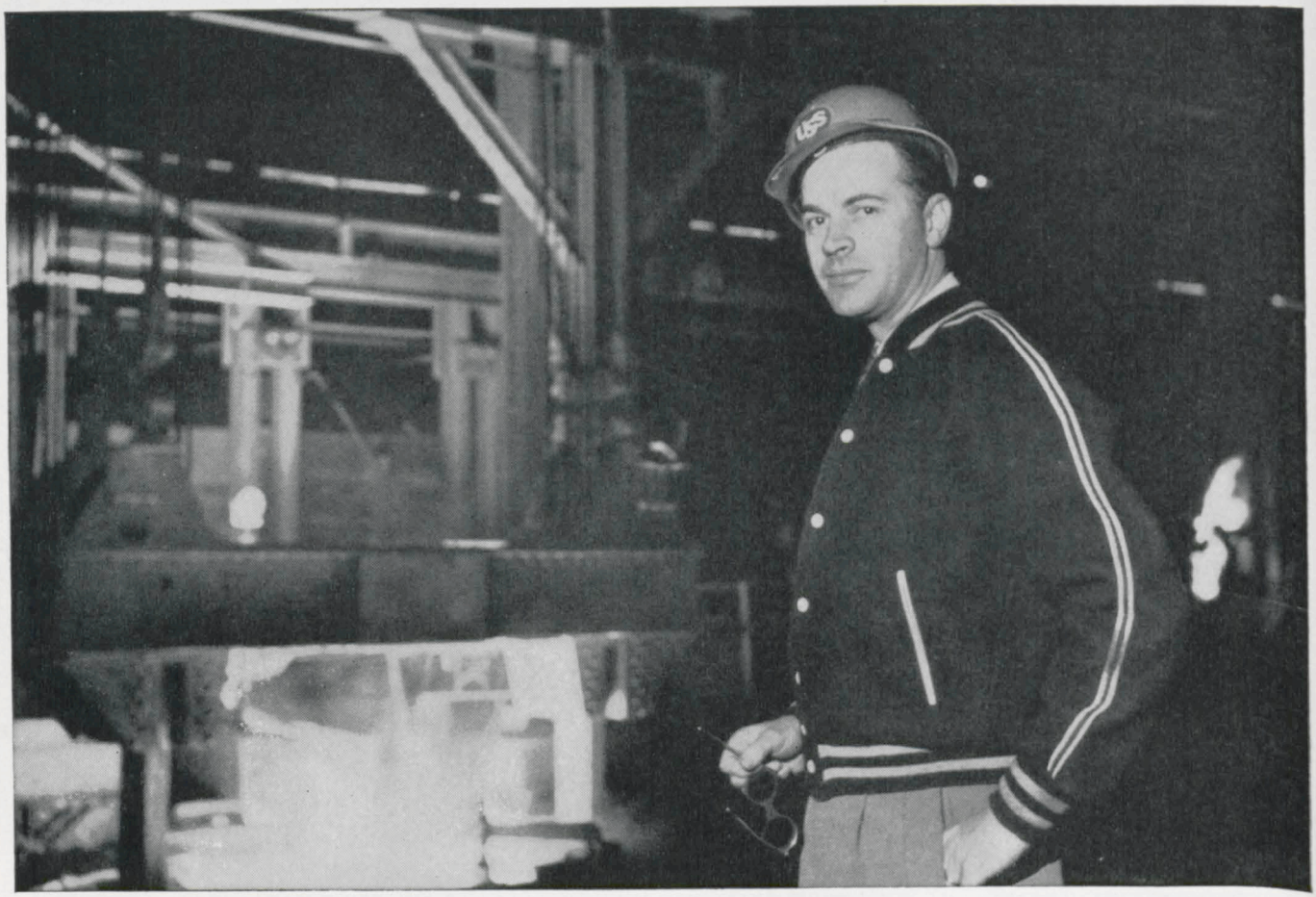
VOL. 15 OCTOBER 1955 NO. 1

SCHOOL OF ENGINEERING
THE GEORGE WASHINGTON UNIVERSITY

OCTOBER 1955

Richard S. Crowell, class of '48, speaks from experience when he says . . .

"There's plenty of chance for advancement at U. S. Steel for today's engineer."



Immediately following his graduation as a B. S. in Metallurgical Engineering, Richard Crowell was recruited by the chief metallurgist of U.S. Steel's Clairton works. By 1951 he received his third promotion to Engineer-Operating Practices in the Open Hearth Division at Clairton. Recently he had his fifth promotion to his current position as Assistant Superintendent of Clairton's Open Hearth Department.

His responsibilities now include assisting in co-ordinating all Open Hearth Operations and incoming materials as well as improvement of methods.

Mr. Crowell knows from his own experience that there are . . . "unlimited opportunities for the young engineer who will apply himself and accept the challenge of this great industry."

U.S. Steel's well-planned training programs offer men a chance to work in varied fields of engineering. Training plans of this sort make it possible for the young graduate to familiarize himself with many fields before devoting himself to one in particular.

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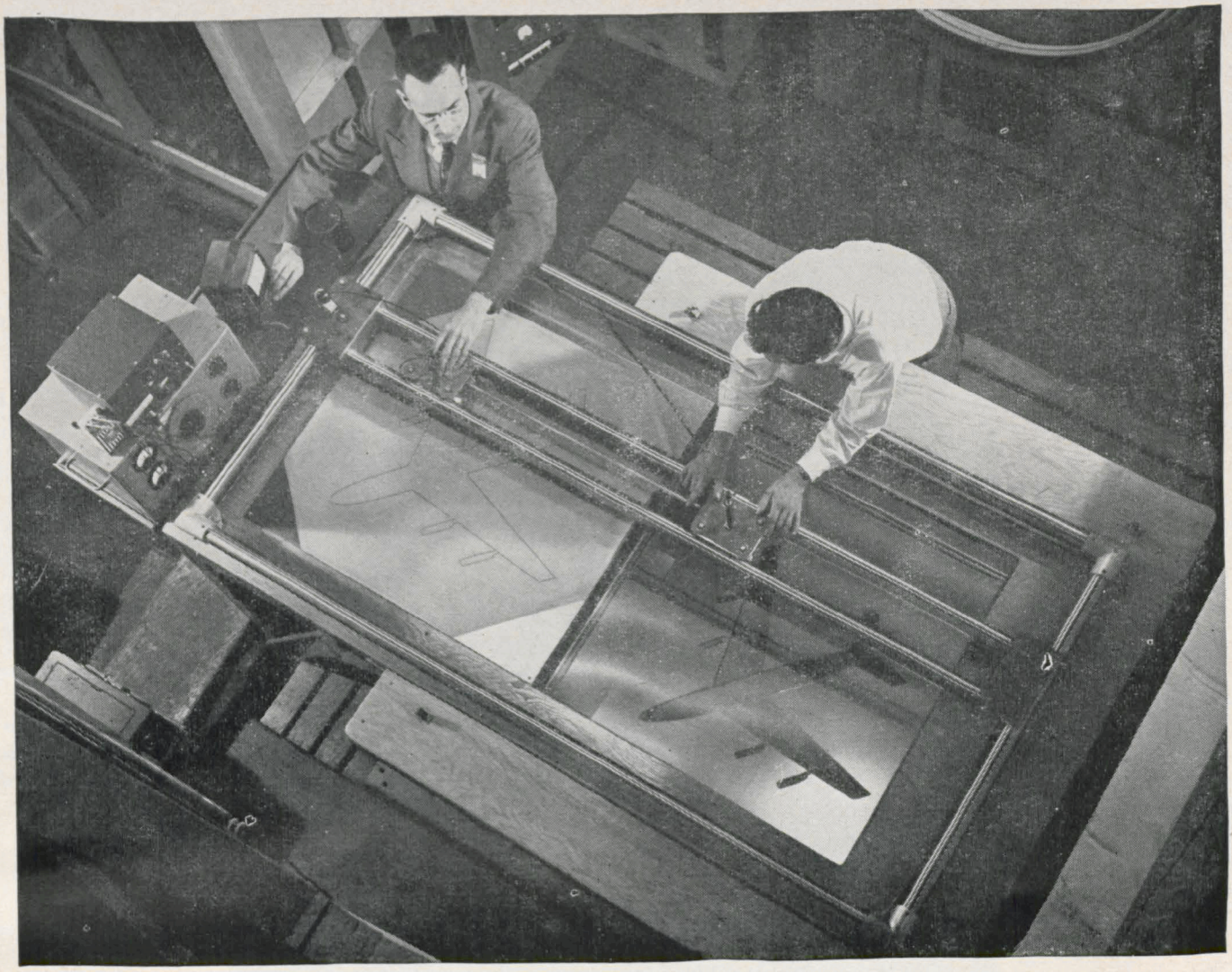

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At Boeing, engineers have the same relationship to draftsmen and engineering aides that doctors have to technicians and laboratory assistants. The abilities of a Boeing engineer are fully utilized: in investigating heat, compressibility and other problems of supersonic flight; in jet, ram-jet, rocket and nuclear power; in electronic control of missiles, and much more—calling for a variety of skills in all the engineering fields.

This electrolytic tank is one example of the superb equipment at Boeing engineers' disposal. Other facilities include the world's most versatile privately owned wind tunnel, a new tunnel under construction, capable of velocities up to Mach 4, the latest electronic computers, and splendidly equipped laboratory and test equipment in the new multi-million-dollar Flight Test Center.

Achievements of each Boeing engineer are recognized by regular, individual merit reviews, and by promotions from within the organization. Boeing offers exceptional career stability and growth: this soundly expanding company now employs more than twice as many engineers as at the peak of World War II.

Of technical graduates at Boeing, 30% are mechanical engineers, 24% electrical, 19% aeronautical and 9% civil engineers. The remainder are chemical, metallurgical, and other kinds of engineers, and physicists and mathematicians with advanced degrees.

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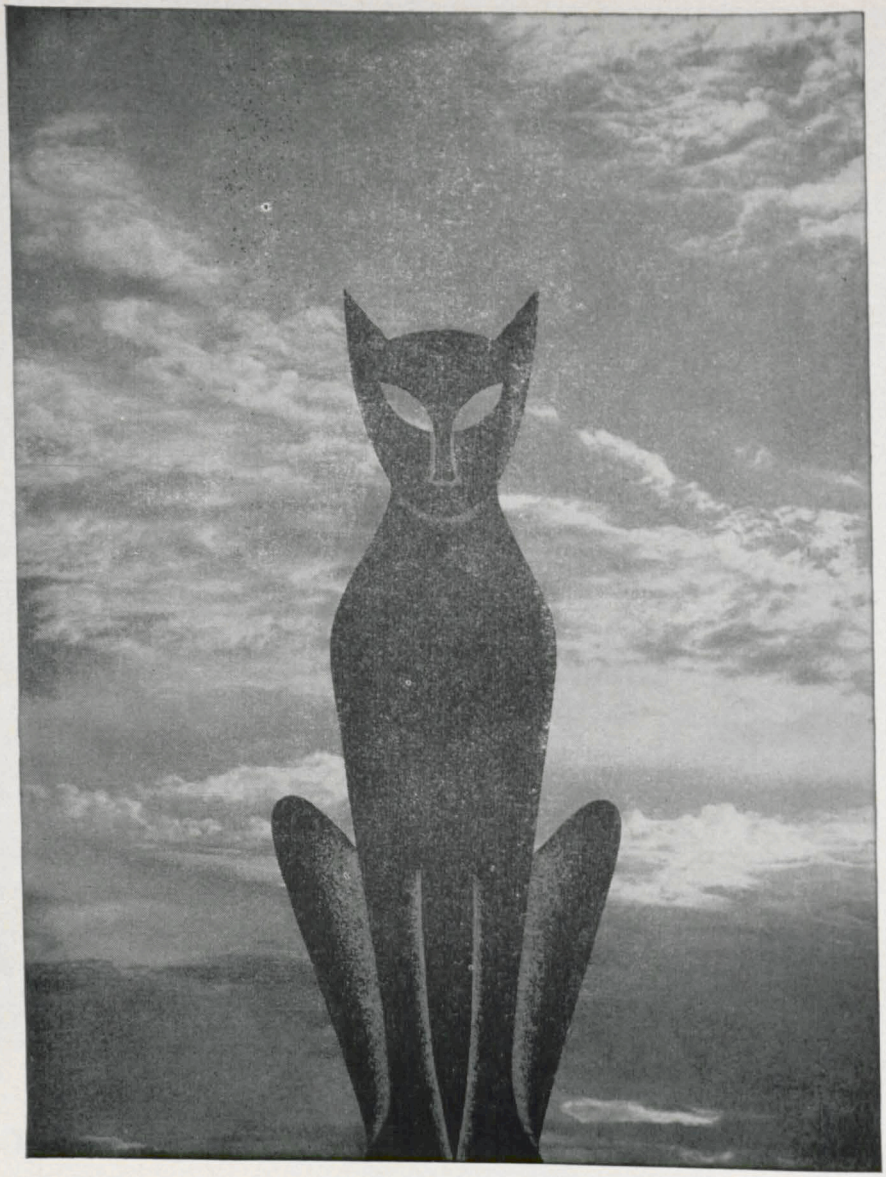

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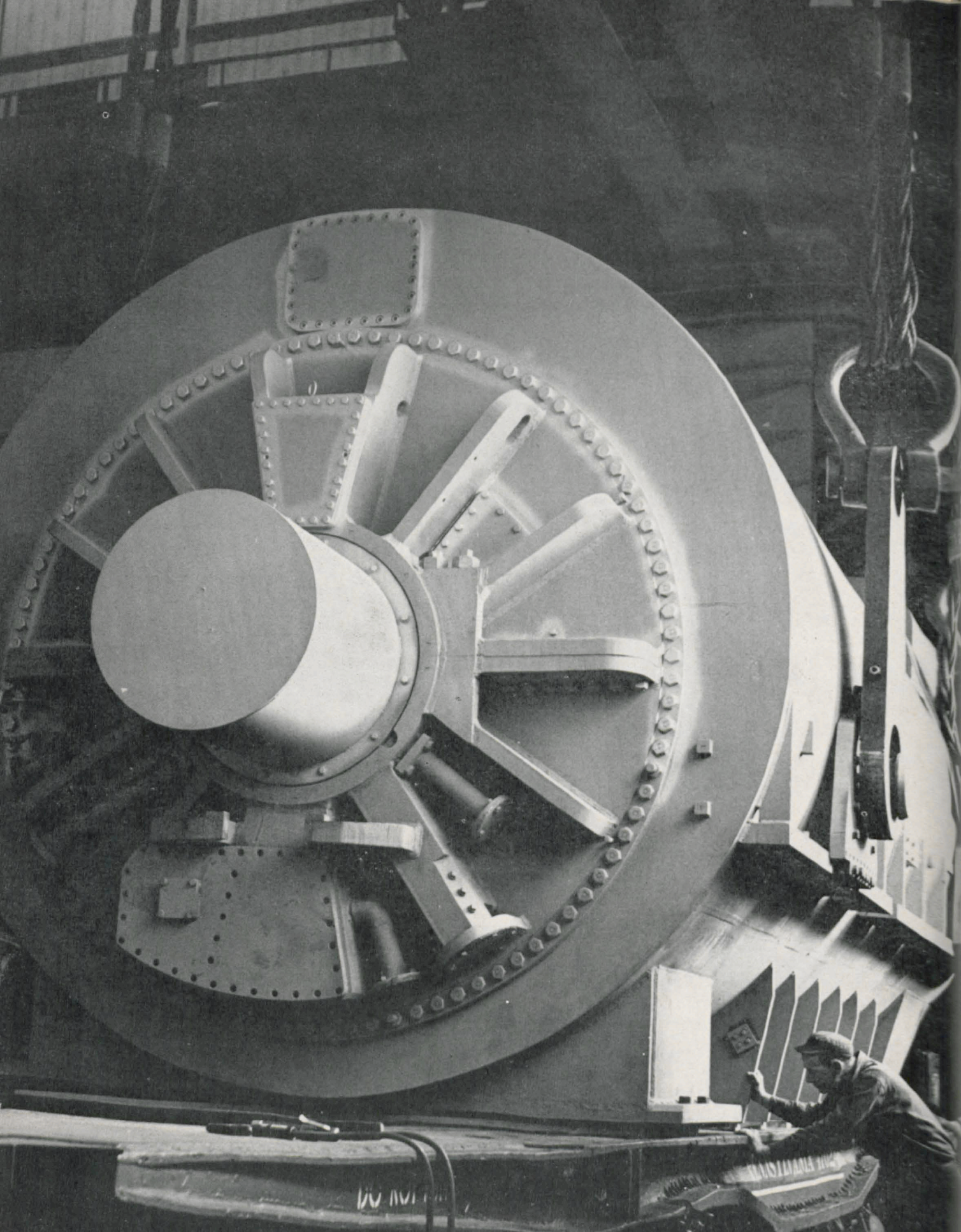
Continents will be only minutes apart in the foreseeable future. The upper atmosphere is now being effectively explored. To the missile systems scientist, there is no such thing as a remote area of this planet.

Guided missile technology is also significantly affecting other areas of scientific endeavor. The impact of nuclear science upon guided missiles alone promises major achievement. Present advances are but a prelude to future progress. Past accomplishments must be multiplied a hundred-fold to visualize growth during the next decade.

To scientists and engineers, missile systems technology presents unlimited scope for personal development. Those desiring to participate in a scientific effort of utmost importance are invited to address inquiries to our Research and Engineering Staff.

E R Quesada

Elwood R. Quesada
Vice President and
General Manager



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VOL. 15 OCTOBER 1955 NO. 1

SCHOOL OF ENGINEERING, THE GEORGE WASHINGTON UNIVERSITY

IN THIS ISSUE

ON OUR COVER

By now, everyone, including the most inexperienced freshman, is familiar with this act caught by the MECHELECIV camera. Although most of the information shown is ficticious, the address is correct for all engineering students—The Davis-Hodgkins House 731 - 22nd Street, N.W.

—PHOTO BY STAN VEST

FRONTISPIECE

This giant "inner-cooled" generator is the most powerful machine of its type ever built—200,000 kilowatts. The coolant, hydrogen gas, is circulated through ducts in the windings of the generator.

—COURTESY WESTINGHOUSE ELECTRIC CORPORATION

Published at the George Washington University by direction of the Engineers' Council. Published six times during the school year in October, November, December, March, April, and May. Entered as second class matter March 6, 1951, at the Post Office at Washington, D. C., under the act of March 3, 1879 Address communications to Mecheleciv Magazine, Davis-Hodgkins House, George Washington University, Washington 6, D. C. or telephone STerling 3-0250, extension 528.

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The Dean

Speaks

By Dean Martin A. Mason

The writing of these few words each year for the first issue of MECHELECIV at the beginning of a new year should be one of the easiest tasks of a Dean. No one tells him what to say, he can let his imagination and limited vocabulary run free, he has only to worry about making as few grammatical mistakes as may be possible for him, and he has a guaranteed readership.

Frankly, despite the apparent ease of the task, I always find it difficult. Why? Because I don't know what to write or to whom I should address the words. Shall I write that we of the University welcome each of you old students back, and not forget we are especially happy that all of you new students have found us to your liking enough to come here to seek your education. Of course not—you don't need to have me express these feelings. You undoubtedly know how glad we are to have you as part of the family.

So what do I write—shall it be some "message" hopefully and carefully concocted to needle you into doing, at least for a few days, the things you know you ought to do without needling; or shall I stir up some treacle about "dear old college" with its ivy-covered walls of Corcoran Hall and the "atmosphere" of dilapidated Draper Hall? I can guess your sophisticated reaction to either of these. Perhaps it were better to write of the growing Tompkins Hall of Engineering, our new home after this year, would I titillate your interest; but your interest is keen already, and the least among you knows we will enjoy the air-conditioned luxury of new classrooms and laboratories within the year.

Maybe I should really work at this task, and prepare an inspirational essay, liberally larded with high-sounding phrases and polysyllabic words, on the opportunity you have before you to prepare yourselves to pick up the burdens of life and as engineers to fight the good fight to save the world from a fate so many profess to be able to see. I guess I won't do that, too many others are experts at pointing out the modicum of truth (the truth is that you do have real opportunity) in the situation in a most moving fashion.

(Aside to new students: The girls in my office have just brought me some tea, which reminds me to tell you that the School of Engineering has the best office staff in the University. If you ever have need of any assistance call on them, they delight in helping you—I suspect they feel sorry for you. Incidentally, the water is usually hot for coffee or tea on Friday afternoons, giving you a good excuse to come by with your troubles or your joys. I'll be glad to see you and so will they.)

Unfortunately, writing and speaking of responsibilities is reserved by tradition for commencements. However, there is something to be said at matriculation (that's the beginning, commencement is the end, of college) about your responsibility to yourself to learn as much as you can as well as you can while in college; to your teachers to be honest, fair and forebearing with them; to your fellow students to give them a chance to know, respect, and accept you—and you them; to your University to know and observe the rules and regulations your peers have established to aid, assist, and abet you in the difficult task you face of becoming educated citizens bearing the title of Engineer in pride and wisdom. But if I write these things I come perilously close to transgressing convention and also running the risk of the editor mistaking this piece for the usual last column of the year.

In fact, I am about ready to confess that this part of being a Dean is just too much for me. All those things the faculty exect me to write, all those things I know I should be writing about to you, all those things that you would like to see here, all these elude me. There is nothing left but to welcome you to our midst with the hope that this coming year may be the most successful and happiest you will have had.

COUNCIL MESSAGE

By S. A. Mawhood

President, Engineers' Council

A few weeks prior to graduation last year, Washington newspapers ran articles under the by-line of United Press stating that the George Washington University Engineering Graduates had received, on an average, the highest salary offers in the country. This is your university and one of which you may be justly proud, a university which may not be able to claim the best football team in the country, but can claim the highest starting salaries for its graduate engineers.

This fact coupled with article after article claiming the dire shortage of engineers may lead some to the false assumption that they are starting a ride on the gravy train. Nothing could be further from the truth for two reasons: first, the so-called shortage of engineers is categorical and not numerical. There are thousands of mediocre engineers who are constantly shifting and looking for their proper place in the profession. Here you are lucky for the quality of instruction at G.W. is the finest available. In addition to an excellent staff of full-time professors, we have specialized instructors from the various research labs such as the National Bureau of Standards, Naval Research Laboratory, etc., who are experts in their fields. Those of you who graduate can be assured of having the basic background necessary to becoming a good engineer. Secondly, engineering department heads have found that there are ten basic requirements to becoming a good engineer. The first five of these are directly concerned with the university curriculum and are well taken care of. The second five, however, are up to the individual. These are initiative, interest, maturity, practicality and responsibility. Since these qualifications are musts for engineers, you should avail yourself of every opportunity to further yourself along these lines by active participation in your school organizations and activities.

G.W.'s engineering school sponsors student chapters of The American Society of Civil Engineers, The American Institute of Electrical Engineers, The American Society of Mechanical Engineers and The Institute of Radio Engineers. These organizations are open to all registered engineering students and afford freshmen and sophomores a chance to become acquainted not only with each other but also with the upper classmen in their particular field. The meetings of these organizations are both social and educational. For those who appreciate a professional fraternity we have Gamma Beta chapter of Theta Tau. Initiation is by invitation, so join your professional society and meet the boys who can invite you. Last but not least, those of you who are able to maintain a high enough scholastic average, upon reaching your junior year may be invited to join Sigma Tau, the National Engineering Honor Society. Further information on all societies and fraternities may be found in the Engineers' Calendar.

In addition to the professional societies and fraternities, the Engineers' Council and MECHELECIV Magazine both afford excellent opportunities for valuable experience. MECHELECIV, which is distributed to both students and alumni on a national scale, is manned by volunteers and anyone wishing to participate on either the business or editorial staff will find a member of the board of editors in the MECHELECIV office in the Davis-Hodgkins House. The Engineers' Council is composed of one elected representative from each of the societies and fraternities and two elected representatives from each of the four classes plus the business manager of MECHELECIV and the house manager of the Davis-Hodgkins House. The principal purpose of the Engineers' Council as coordinator for the various organizations is to act as liaison between engineering students and the university. It maintains the Davis-Hodgkins House which is open from 8 a.m. to 11 p.m. and is for the use of all engineering students. In addition, it acts as board of publishers for MECHELECIV Magazine and plans the several all-engineering functions which are held during the school year. The principal functions held are the Engineers' Mixer, the Engineers' Banquet and Ball and the Annual Christmas Tree Lighting. The first of these, the Engineers' Mixer, is the principal reason for writing this article. The mixer is held with one purpose in mind, to allow students, freshmen to seniors, to get to know each other and to meet the faculty on an informal basis.

(Please turn to page 24)

The Rare and Silent Breed

An Editorial Note to the Beginning Freshmen

by Guerdon Trueblood

Sometime within the first three months of the four or five years it takes a neophyte to obtain an engineering degree at G.W., he will find himself seated at a table in the student union with four or five other individuals. The other members of the entourage will not all be engineering students. Perhaps one is majoring in psychology, another in history. The loudest individual at the table, most probably, is majoring in political science or business administration. There might even be a hard-faced young woman present. She uses her spoon more as a scalpel than as an implement to stir coffee because she is destined to be a doctor. At a point in the conversation which inevitably ensues, one of these hypothetical beings will surely ask the neophyte what he is majoring in. He will answer, simply, "Engineering." If any of them bothers to think about his reply, their most probable train of thought might be something like this:

"An engineer. Hmm. He looks the type. Too smart for us liberal arters, what with messing with all that math and science stuff. At least he'll be able to get a job when he gets out of this place. They say these guys start a couple thousand better than anybody else. I coulda guessed it from his tie—loud, cause he ain't. Naw, these birds get lost in all that math when their real young and easily impressed. He'll never live, but he'll be rich. . ."

This obviously is somewhat exaggerated, but I have seen these thoughts as they passed behind the eyes of some students when I have been introduced to them as an engineering aspirant. I do not approve of this type of thinking, but there are some elements within it that should be considered.

The engineer is a professional man and enters into a life of service, creation, and responsibility. The devices with which he deals are seldom understood by the layman as they are too complicated and are becoming more so every day. To the man on the street he becomes a mystic, a dealer in the unknown. He is a rarity because he understands why things work.

Most men entering college to pursue an engineering course usually have dabbled in the field already. As teenagers they built automobiles from junk, became ham radio operators, or perhaps, just to amuse themselves, made worthless mechanical devices. These hobbies or interests took up a great deal of the adolescents' time and drew them away from other people, except from those who were interested in the same type of hobby. As a rule, sports were too demanding upon the time which could be devoted to these hobbies and, before too much thought had been placed in a social direction, many dances and like affairs had been passed over.

As a graduating senior in high school, the boy with engineering aims finds himself somewhat divorced from society en masse and puzzles with the situation. He might blame it on engineering bent, on a multiplicity of reasons, but usually considers it a result of his "not being built that way," the greatest blanket excuse known to man. These hobbies are excellent preparation for the technical end of an engineering career, but what has prepared this individual for life in general? His language is minced with technical and semi-technical terms, his social graces are correct but stiff from dormancy and lack of practice, his knowledge of other fields (which are much more interesting than engineering ever will be to the average man) is limited outside of what was mandatory for him to learn in high school. The good books have lain unread by him in favor of some manual dealing with his hobby and the world of art is a distant thing to him, a frontier not worth exploring because there is little reason for its existence, after all, it can't run anything or move things.

Few beginning engineers are philosophers in the finished form and thus they should not already be dissatisfied with society and bored by seemingly purposeless conversation. But so they seem to be in conversation concerning general topics. They are silent partners to a portion of the drama of life that it is their privilege to enjoy. They possibly fear to enter

". . . in favor of some manual dealing with his hobby . . ."

boldly into the torrent of words and impressions which articulate students can create. They fear to stop this torrent by entering it and not adding to it, thus becoming objects of momentary social ridicule. Even when they do have something of value to add to the conversation they might choose not to enter it because experience has shown them that their phraseology is such to contain little of interest besides the actual fact they hoped to impart. They admit to themselves that they lack the facility of expression.

This inability to express himself leads the engineer to find society with his own kind and with them he feels at ease. The topics are usually far more complex in engineering students' conversations and possibly much more difficult to carry on, but it makes no difference. The engineering student has learned this type of social intercouse and expression in the process of growing up and has no fear of it.

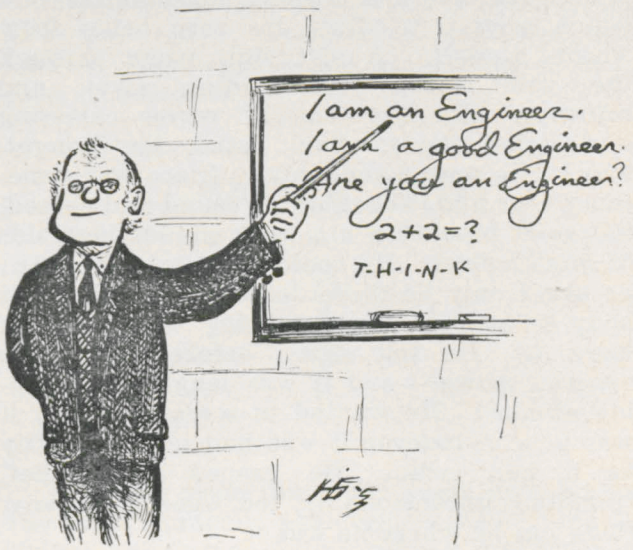
And so he becomes one of the rare and silent breed called engineers.

The above hypothetical evolution is, admittedly, in great part a generalization. It may apply en toto to one student in the School of Engineering, partly to a few, and no manner to the remainder. It has been said, by a discouraged envoy from industry, "Engineers are by definition semi-literate," showing that, even if the so-called evolution is incorrect, the resulting individual does in actuality exist. The greatest engineer, if he is not able to communicate his ideas with facility, will be buried behind the scenes of some productive or research organization and some other man in the picture will get whatever rewards are coming to this tireless, creative mind. He will find himself unable to expound upon his work or theories to men of no engineering background who could possibly finance him in whatever project he would have to undertake to succeed scientifically.

In our technological society there are many sciences. One of the newest and most valuable is the science of invention, of devising an instrument to fulfill some need of industry or research. This science of invention is founded, primarily, on the ability of collected minds to work as one unit. If these collected minds are not able to communicate with facility, the purpose of joining their mental talents is defeated.

It might be recalled that Einstein's theory of relativity and many other valuable scientific discoveries were first introduced in the form of papers to be read before scientific societies. Had the men behind these discoveries not known how to communicate with facility, their ideas might have been misinterpreted, depriving science of the chance of progress.

However, engineers don't only deal with engineers. They deal with their wives, their families, the grocer, the plumber, the physician, the door-to-door salesman. They deal with their employers (who may not be engineers, but businessmen) and men in public service. I do not have the statistics, but I have heard it said that one engineer exists for every two-thousand people in other occupations. It is conceivable that the engineer might have to come in contact with his two-thousand people during his lifetime for a multitude of different reasons, and when he does, he must meet them on a common ground that cannot be engineering. That common ground might be last night's



"Engineers are by definition semi-literate . . ."

baseball game, Truman Capote's newest book, Earl Bostic's latest record, or the brush and perspective technique of Matisse.

A man does not have to be an authority on everything that could conceivably arise in the course of meeting people, either for business reasons or pleasure, and there is much to be said for the art of listening, but the man with minor "cultural" interests will find himself at a great advantage if he has the facility of expressing what little he knows with ease and conviction. Further, these "cultural" interests will be added to and broadened as a result of even what might be classed as trivial discussions.

Today's engineer must be creative and communicative almost equally. I believe that the nature of the engineering education leads to creation. Physics was created, in essence, to explain, by use of mathematics and logic, just exactly what lay behind certain phenomena of nature. The more knowledge that the early physicists uncovered, the more creative they became, adding theories that could possibly be accepted to those that had been. Applied physics crept out and became part of the body of engineering, thus imparting the same searching curiosity—which leads to creativeness—to our rare and silent breed.

Facility of expression and communication is not in the nature of an engineering education and courses with this specific end in mind can-

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"Q" as in Quandary

by Walt Evans

He opened his eyes slowly and stretched out his hand to feel the smooth, icy substance upon which he lay. A shudder ran through him as his eyes met a black, meaningless void which seemed to drain his very being from within himself. A soft sigh swept through the void above him, fading away and returning like the echo of waves caressing a deserted shore. Soul, mind, he thought, why? He tensed suddenly! There was something near him. The sighing sound had ceased, the quiet blanketed him with suffocating folds of black velvet. He could not move or speak; he could only lie there desperately willing his body to action. He was being watched. He knew it. He felt naked before some alien superior power—and it was laughing—laughing at him! He wanted to scream! Then it was gone ,whatever it was had left as swiftly as it had come. He gasped with relief, trembling uncontrollably, too weak to do anything but lie where he was.

So this was the ultimate end to his search, this unexpressible nothingness filled with nameless terror. The great goal for which he had strived now seemed nothing more than a nightmare. This was the answer to the greatest intellectual problem mankind had faced since the dawn of the first day, when one of them had lifted his eyes from the soil, gazed into the heavens and wondered why. Why? The immensity of the problem had awed him, depressed him. For what reason had he been placed on this speck of matter—made to care for an inefficient, imperfect body and cursed with a mind incapable of anything but creating questions to whch he could find no answer.

In the mind, his own mind, that cellular mass of gray tissue resting within his skull; the intricacy and super-delicacy of its construction had always astounded him. It was comparable to an infinitely complicated electronic device; the function of every part could be explained; the mystery was its source of power. He never faltered in his task, he carefully tabulated each mental reaction to thousands of specific situations. He analyzed every emotion, split each into every conceivable degree of difference. He devised rigorous mental exercises, thought projection, complete isolation of the mental from the physical processes, absolute command of those physical processes by will alone.

The day at last arrived when he believed he was ready. He alone of all his race had at last become the master of his own consciousness, the million facets of his being were entirely at his command. With this new power he would project himself to the end point of creation, where all extremes met, the divine, the base, the ignorant, the brilliant.

He began his great experiment. He could not help but allow thoughts of ultimate power to flash through his mind; what would it mean when he knew the end and the beginning of destiny—could there be such a thing?

He had ceased trembling. The blackness seemed to have lessened slightly. A discomforting sensation of motion crept over him despite his certainty of physical stability. There was no doubt about it. His body was still with him. He had projected only pure intelligence yet he was here in his entirety. Where was he? What had happened? He had not died. The experiment should have gone no further than the net capacity of his own intellect. That was it. That was his error, the most stupid and common of all errors, the subconscious refusal to doubt himself and his purpose. The complete certainty of his own infallibility. He nearly wept. He had done no more than cast himself in his own small place in an immense pattern of existence which ten million minds of his own could not even attempt to explain. Yet, in spite of this, the bitterest of all realities, there was something to be learned, the final purpose, a key, though a small one, to the great puzzle.

He was becoming frightened now, he seemed to be traveling at an incredible velocity, yet there was no sensation of motion, no wind or passing landscape, just the indescribable void surrounding him. The noise had changed from a sigh to a hissing hum. He felt as if he were growing larger and larger. His speed picked up, increasing every second; he closed his eyes tightly—there was a blinding, burning flash of light!

"This gentlemen," the professor was saying, "is a Wilson Cloud Chamber. When alpha rays from radium are sent through gas in the chamber, they knock off electrons from nearby atoms, and as result the gas in the path of the alpha ray becomes ionized. If it is saturated with water, then cooled, minute droplets of fog gather on these charged particles, and, consequently, a fog track marks the path of the alpha particles.* Watch carefully as I throw the switch—there! Did you see that unusually bright one!"

* General College Chemistry, Richardson and Scarlet, Chapter 6, Paragraph 61a.

SOCIETIES AND FRATERNITIES

To the engineering student newcomer to G.W., the extent of professional life may appear to be centered in classes, of social life, the Student Union. Actually, nothing could be further from correct; the field of engineering professional, social and extra-curricular activities is quite extensive at G.W. This fact has been given official recognition, in quite a unique way, by the school of engineering: Wednesday nights have been set aside as meeting nights for the engineering organizations. The societies meet on the first Wednesday of each month, the fraternities on the next two, and the Engineers' Council on the fourth. The G.W. engineering "campus" boasts four of the largest engineering societies and two of the oldest engineering fraternities in the country. The societies which promote student professional interest are the A.S.M.E., the A.I.E.E. —I.R.E. and the A.S.C.E. The two fraternities, Theta Tau and Sigma Tau are engineering professional and engineering scholastic fraternities, respectively. To better acquaint its readers, be they new students or old, mechanicals, civils or electricals, MECHELECIV presents here a resume of the pertinent facts, traditions and purposes of each. . .

THETA TAU

In this modern world of technology where the age of an industry, such as the television industry, may be measured in terms of tens of years, Theta Tau may seem old, for it dates back more than half a century. Theta Tau saw its birth at the University of Minnesota in 1904, and has since grown to its present size of twenty-three chapters in engineering schools and colleges throughout the country.

The purposes of Theta Tau are to help develop a high standard of professional interest among student engineers and to unite students in the various fields of engineering with strong bonds of fraternal friendship. Therefore, its membership requirements are such that Theta Tau does not compete with either social fraternities or engineering societies.

In 1935, the Gamma Beta Chapter of Theta Tau was founded here at George Washington University. Each year the chapter holds two Invitation Balls and Banquets for its new members. In addition to these two main events, other parties and picnics are held throughout the year.

Membership into Theta Tau is obtained by invitation only. Prospective members are selected from engineering upper-class men in good standing.

SIGMA TAU

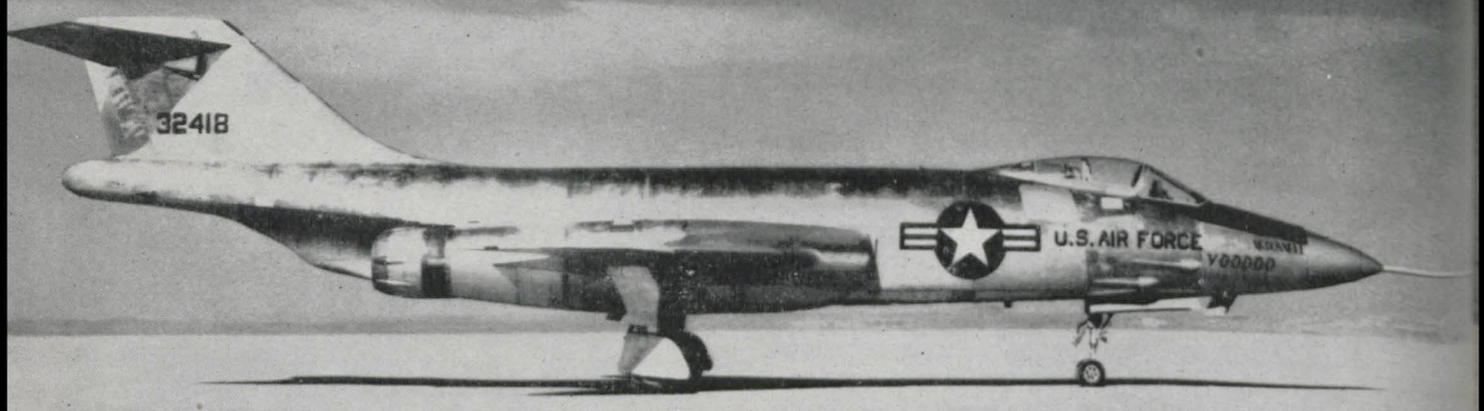
Founded more than fifty years ago, Sigma Tau is an academic achievement society recognizing scholastic ability among engineering students. At the George Washington University there are four major academic achievement societies: Phi Beta Kappa for the Columbian College, Order of the Coif, for the Law School, Sigma Xi for science majors, and Sigma Tau for the School of Engineering. Membership in each of these societies is based upon scholastic standing in the junior and senior classes; Sigma Tau selects its members from the upper one-third of their classes. Sigma Tau was founded at the University of Nebraska in 1904; there are now twenty-eight chapters throughout the country. Xi chapter was founded at the George Washington University in 1921, and has since been very active in engineering student life.

Aside from its own functions, Sigma Tau engages in many activities designed to help the student body, the school and the University. Of primary interest to lower-classmen is Sigma Tau's counseling service, designed to assist any student who is experiencing difficulty in any of his engineering courses.

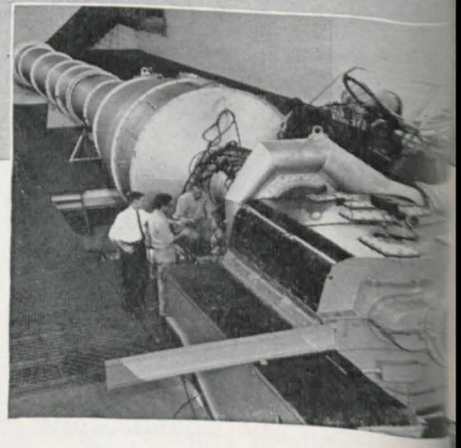
Through its own structure, Sigma Tau promotes greater scholastic achievement, for membership is an honor for which every engineering student should strive. Recognizing the importance of making the scholastic hurdle of the freshman year, Sigma Tau annually cites the Sophomore engineering student who, during his freshman year, has attained the highest grade average in his engineering courses.

(Please turn to page 14)

it takes many engineering ski



McDonnell "Voodoo", *the most powerful jet fighter ever built in America.*



J-57 POWERED AIRCRAFT

MILITARY

F-100	F8U
F-101	A3D
F-102	B-52
F4D	KC-135

COMMERCIAL

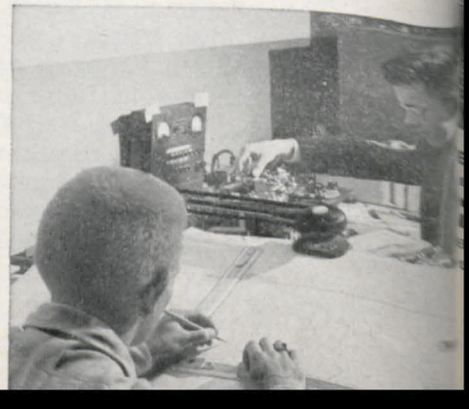
Boeing 707

Douglas DC-8

MECHANICAL ENGINEERS are concerned with many phases including experimental testing and development, mechanical design, stress and vibration analysis, combustion research, heat transfer and nuclear reactor development.

AERONAUTICAL ENGINEERS work on innumerable internal and external airflow problems concerned with design, development and testing of aircraft powerplants. Some who specialize in analytical engineering forecast engine-airplane combinations a decade in advance of design.

ELECTRICAL ENGINEERS directly contrib their specialized skills to the analysis development of controls, systems and spe instrumentation. An example is the "Plo mat" which automatically integrates and p pressures, temperatures and air angles performance testing.



create the top aircraft engines

An aircraft powerplant is such a complex machine
that its design and development
require the greatest variety of engineering skills.
Pratt & Whitney Aircraft's engineering team
has consistently produced
the world's best aircraft engines.

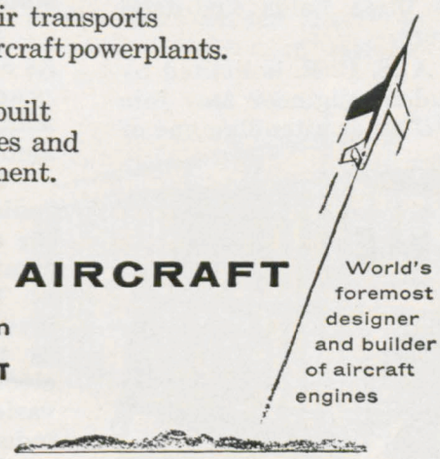
The best planes are always designed
around the best engines. Eight of the most
important new military planes are powered by
Pratt & Whitney Aircraft J-57 turbojets.
The first two jet transports in the United States
will use J-57s. Further, no less than
76 percent of the world's commercial air transports
are powered by other Pratt & Whitney Aircraft powerplants.

Such an enviable record can only be built
on a policy which encourages, recognizes and
rewards individual engineering achievement.

PRATT & WHITNEY AIRCRAFT

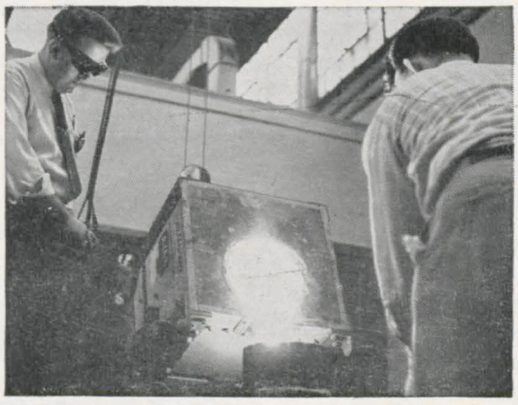
Division of United Aircraft Corporation

EAST HARTFORD 8, CONNECTICUT

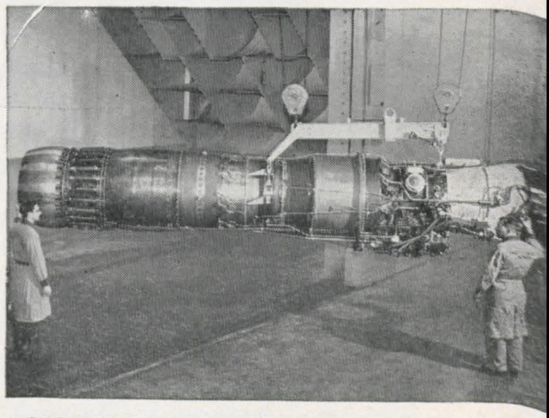


World's foremost designer and builder of aircraft engines

CAL ENGINEERS, too, play an important
hey investigate the chemical aspects of
roducing and heat-transferring mate-
This includes the determination of
and equilibrium diagrams and exten-
nalytical studies.



METALLURGISTS investigate and develop high temperature materials to provide greater strength at elevated temperatures and higher strength-weight ratios. Development of superior materials with greater corrosion resistance is of major importance, especially in nuclear reactors.



WORLD'S MOST POWERFUL production aircraft engine. This J-57 turbojet is in the 10,000-pound thrust class with considerably more power with afterburner.

Societies and Fraternities

(Continued from page 11)

ASCE

Literally the grandfather of all engineering professional societies, the American Society of Civil Engineers was founded in 1852. Far from showing its age, the A. S. C. E. promotes a progressive program at both its professional and student levels. Within the past year the student chapter has heard many eminent men in the field speak on a wide variety of subjects varying from prestressed concrete to aircraft structures.

Like the other branches of engineering, civil engineering encompasses a wide and diversified field. So great is the choice of fields that the A. S. C. E. attempts to present to the student a glimpse of each, along with the opportunity to discuss these fields first-hand with practicing engineers.

Membership in the A .S. C. E. is limited by interest only. Any student engineer may join by signing up at registration or attending one of the monthly meetings.

ASME

The G. W. U. Student Branch of the American Society of Mechanical Engineers is open to any interested engineering students. The Washington section of The A.S.M.E. sponsors the student branch, and has also opened its meetings to student members with an invitation to attend meetings and inspection trips.

The program of the A.S.M.E. meetings is as diversified as the field of mechanical engineering itself. During the school year, speakers and movies covering a wide range of subjects are on the interesting programs. For subjects of interest of all engineers, the A.S.M.E. has combined with the other societies for their professional program. During the past school year, speakers were heard covering subjects from jet engines to professional registration of engineers.

There will be an A.S.M.E. official to accept membership applications and distribute information in the Mechanical Engineering registration room on registration days. Should you miss this opportunity to join the A.S.M.E, you may attend any one of their meetings to obtain membership information.

AIEE—IRE

Just as the study of electrical engineering is integrated in college, so are the two engineering societies in this field. The AIEE-IRE Joint Student Branch is composed of two independent societies, namely the American Institute of Electrical Engineers, and the Institute of Radio Engineers. Although the two societies are integrated in name in the Joint Branch, a student may join either one or both of them.

The AIEE was founded in 1884, and has as its objective the advancement of the theory and practice of Electrical Engineering, and the maintenance of a high professional standing among its members.

The IRE was founded when the field of radio was still in its infancy. It is devoted to the advancement of the theory and practice of communications, electronics and allied fields.

Throughout the year, the Joint Branch invites speakers from government and industry to talk of various subjects in the field of electrical engineering. The program is often varied by movies or inspection trips to nearby industrial plants.

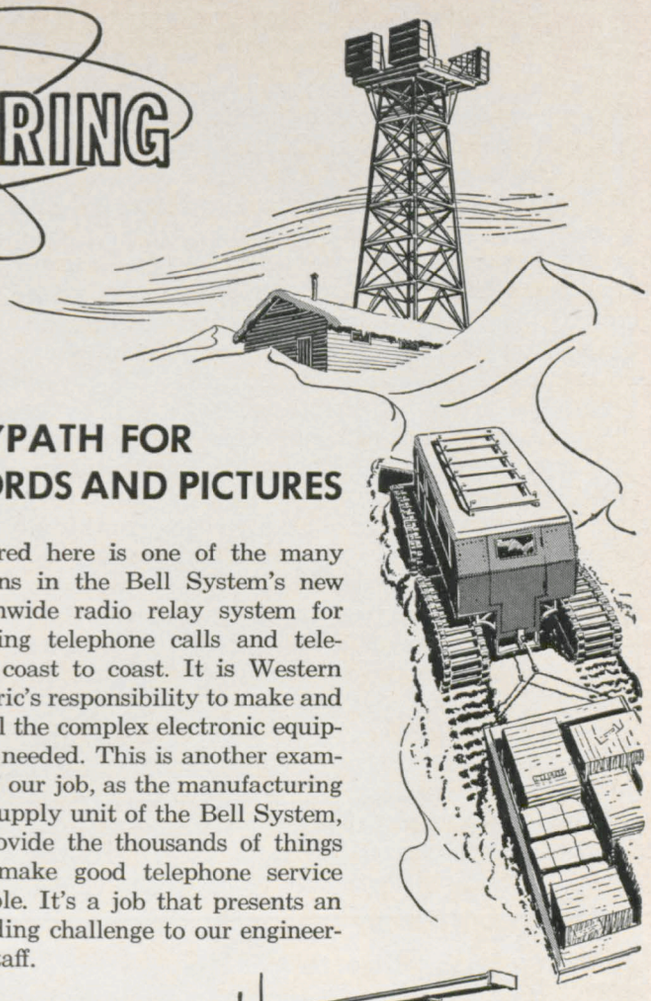
Students may join the Joint Branch by either signing up at registration or attending one of the banch meetings.

A truck driver, hauling clay for a fill, backed his truck too far over the dump grade. The weight of the load being dumped lifted the front end of the truck several feet off the ground.

"Now, what are you going to do?" an associate asked.

The driver eased out of the cab and said, "I think, I'll grease it—I'll never get a better chance."

CREATIVE ENGINEERING

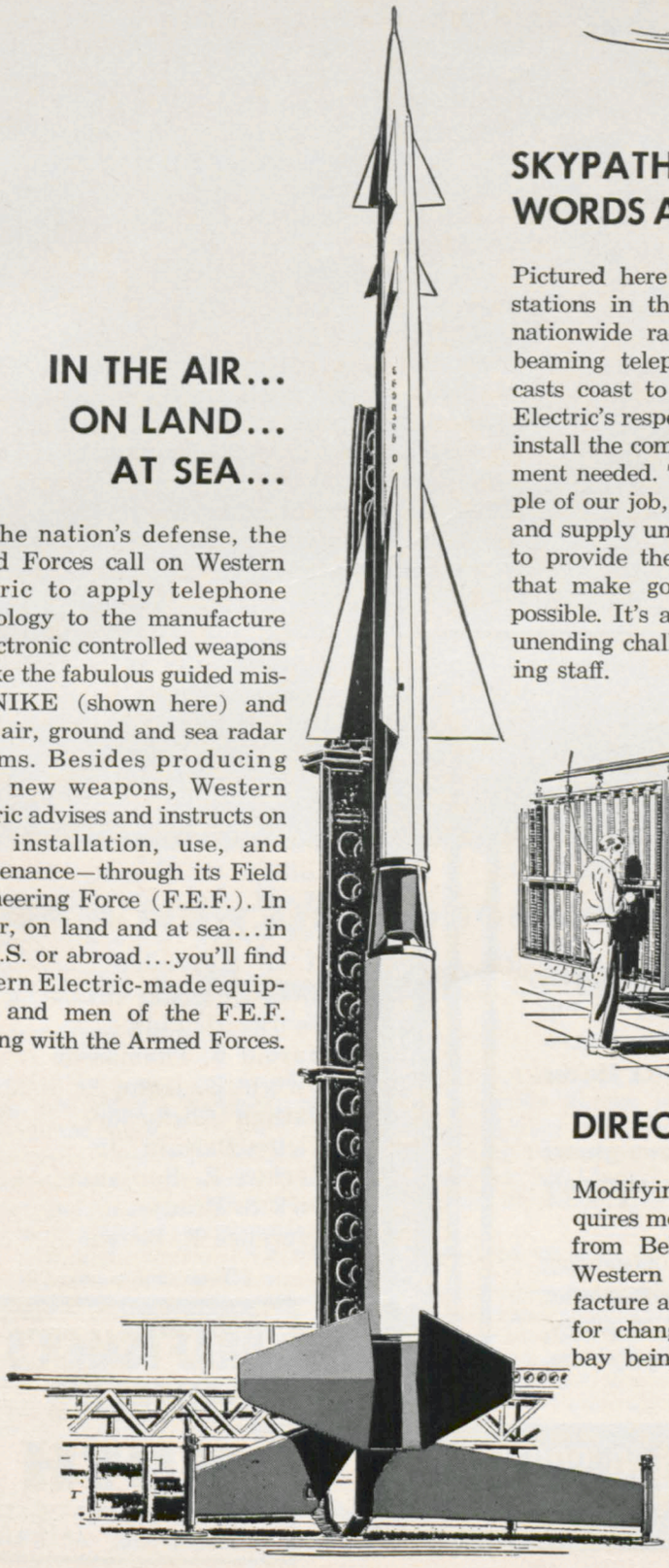


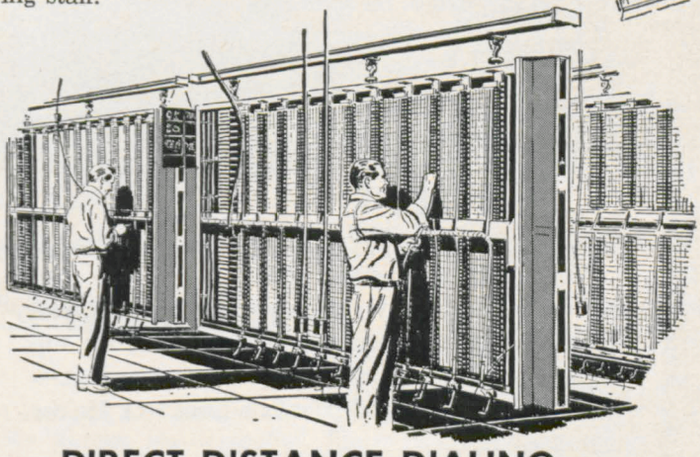
SKYPATH FOR WORDS AND PICTURES

Pictured here is one of the many stations in the Bell System's new nationwide radio relay system for beaming telephone calls and telecasts coast to coast. It is Western Electric's responsibility to make and install the complex electronic equipment needed. This is another example of our job, as the manufacturing and supply unit of the Bell System, to provide the thousands of things that make good telephone service possible. It's a job that presents an unending challenge to our engineering staff.

IN THE AIR... ON LAND... AT SEA...

For the nation's defense, the Armed Forces call on Western Electric to apply telephone technology to the manufacture of electronic controlled weapons . . . like the fabulous guided missile NIKE (shown here) and other air, ground and sea radar systems. Besides producing these new weapons, Western Electric advises and instructs on their installation, use, and maintenance—through its Field Engineering Force (F.E.F.). In the air, on land and at sea... in the U.S. or abroad... you'll find Western Electric-made equipment and men of the F.E.F. working with the Armed Forces.





DIRECT DISTANCE DIALING

Modifying telephone systems for nation-wide dialing requires months of make-ready. Working with technical men from Bell Laboratories and Bell telephone companies, Western Electric engineers develop and plan the manufacture and installation of the intricate equipment needed for change-overs. Shown here is an automatic switching bay being manufactured in one of Western's 16 plants.

Western Electric

MANUFACTURING AND SUPPLY UNIT OF THE BELL SYSTEM

PLEASE AND THANK YOU

Having been brought up to say "please" when we wanted something and to indicate our gratitude by saying "thank you" when we got it, we, the staff of MECHELECIV, would like to follow that well-established pattern in discussing one of our major problems. If you haven't guessed it by now we'll tell you—we're going to talk money—and,unfortunately, **your** money. Not very much of it when considered on an individual basis but a goodly sum when the overall group is considered.

The number of alumni who sent in subscriptions during the past year is gratifying when compared with such figures for previous years but when compared against the vast number of alumni from whom we hear nothing, the paid-subscribers' list leaves something to be desired. It seems pertinent in our first issue of a new year, our fifteenth, to remind you that MECHELECIV is published entirely on returns from three sources: a percentage of the $1.50 Engineers' Council fee which is charged each student in the School of Engineering, the income from advertisers, and the $2.00 annual subscriptions from alumni. We have no trouble getting our share of the Engineers' Council fee, and the advertisers either ante up or are not included as advertisers; but, the alumni subscriptions have heretofore found their way to the MECHELECIV office in some more or less fortuitous manner and in relatively small numbers.

We provide our advertisers with a fairly sizable circulation of over 2,300 copies so they get their money's worth but we find ourselves coming out on the short end of things because an alarmingly large percentage of these copies are sent gratis to alumni. This situation, while inherently unbusinesslike, is something to which we must submit and it puts us at a definite disadvantage when competing with our peers of the Engineering College Magazines Associated.

We of the MECHELECIV staff see a progressively more successful future for the GWU School of Engineering and would like to see our (yours and ours) magazine keep pace. Won't you please, if you haven't already done so, send in your subscription as soon as possible? And how about a few details about yourself for the Alumviews page?

MECHELECIV would like to say "thank you" to the following alumni who have sent in their subscriptions since the May issue was published:

Norman B. Ames	'16
Harry C. Conner	'37
Edward Egloff	'50
E. C. Hughes	
Jay Yong Yang	'30
C. Edwin Becraft	'51
John E. Dodge	'54
James M. Drysdale	'06
Gilbert A. Engen	'36
W. H. Free	'23
Joe Hayes	'50
O. G. Magrader	'16
R. E. Peteritas	'51
George D. Pida	'47
Harold B. Thomasson	'48
Dwight E. Hahn	'27
Nathan Abramson	'17-'33
Victor Battani, Jr.	'53
Vernon E. Benjamin	'52
Dirk S. Brady	'43
Laurence R. Brown	'49

(Please turn to page 18)

RCA's New Orthophonic High Fidelity Sound Opens a New World of Music

From Ceylon to Chile, people of the world can now enjoy a wonderful new kind of recorded music.

This is made possible by RCA's development of New Orthophonic Sound that weds the beautiful tone of RCA Victor records with the superb performance of new high fidelity "Victrola" phonographs. Born of RCA's acoustical and electronic research, New Orthophonic Sound reproduces a noticeably wider range of sound frequencies, perfectly balanced for musical realism.

The experience and skill behind this achievement are inherent in all RCA products and services. And continually, RCA scientists at the David Sarnoff Research Center in Princeton, N. J., are working toward new thresholds of "Electronics for Living" — electronics that make life easier, safer, happier.

WHERE TO, MR. ENGINEER?

RCA offers careers in research, development, design, and manufacturing for engineers with Bachelor or advanced degrees in E.E., M.E. or Physics. For full information, write to: Mr. Robert Haklisch, Manager, College Relations, Radio Corporation of America, Camden 2, N. J.

NEW ORTHOPHONIC HIGH FIDELITY "VICTROLA" PHONOGRAPH, $129.95
With Panoramic Speaker System — 3 speakers scientifically angled to diffuse sound throughout room. Mahogany or modern oak finish. Legs optional, extra. Model 6HF5. Other high fidelity instruments to $1600.

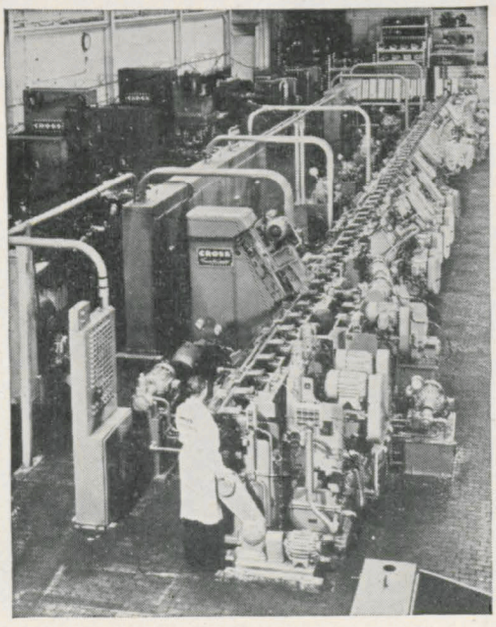
RADIO CORPORATION OF AMERICA
ELECTRONICS FOR LIVING

Please and Thank You

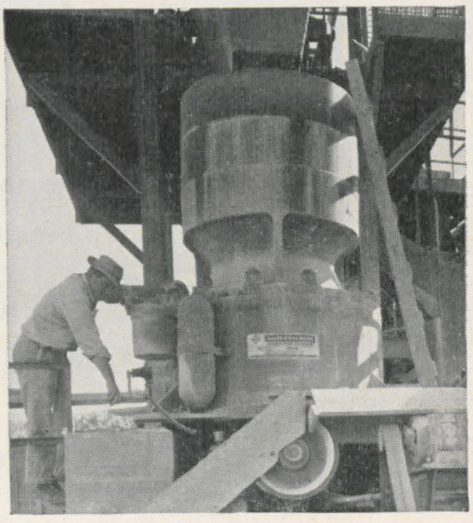
(Continued from page 16)

Adrien F. Busick, Jr. ..... '26
Bernard B. Chew ..... '40
Alvin Cosman ..... '50
Robert E. Dudley ..... '49
Col. George W. Easterday.. '09
Howard A. Grayson ..... '50
M. A. Gaffney
William C. Harris, Jr. ..... '54
Frank A. Howard
Howard W. Hodgkins ..... '13
Fremont H. Jewell ..... '48
George A. Kilpatrick ..... '45
Glen R. Lawrence ..... '10
Louis L. Ludlow, Jr. ..... '31
H. M. Mainhart ..... '49
Charles J. Michelson ..... '39
Sutemi Murayama ..... '45
Spencer S. Prentiss ..... '28
Edgar J. Roccati ..... '42
Daniel F. Shimkus ..... '51
Joel S. Sonnabend
John C. Stafford ..... '45
Eugene J. Sullivan ..... '34
T. Keith Allen ..... '49
Howard W. Bishop ..... '35
Lawrence D. Freeman ..... '49
John H. Geist ..... '49
George G. Garman ..... '31
Leopold Golden ..... '49
Charles W. Griffin, Jr. ..... '49
Donald J. Hanrahan ..... '50
Donald J. Helvestine, Jr. .. '33
George P. Kalv ..... '47
Herman J. Katzman ..... '49
J. Harold Link ..... '40
Edward G. Lippitt, Jr. .... '49
Richard P. McConnell
Thomas F. Murphy ..... '35
Raymond F. Muth ..... '38
Robert E. Niederstrasser Jr. '52
William A. Percival ..... '50
J. S. Petrolino ..... '51
Victor L. Reddle ..... '49
Carl H. Roeder ..... '37
Alan M. Staubly ..... '35
Peter H. Roeser ..... '32
George F. Titrington, Jr. .. '50
Charles A. Urbine ..... '25
John P. Wildman ..... '30
Malcolm F. Hodges ..... '48
Charles R. Seckinger ..... '29
A. E. Mitchell
Frederick H. Doe, Jr. ..... '47
Joseph P. Pendergast ..... '54
Reid D. Mayo ..... '49
William K. Whittemore .... '50
Francis G. Browning ..... '53

Build your future on these 3 Growth Industries . . .



MANUFACTURING — There are 51 Allis-Chalmers motors in this lineup of machine tools designed for high automobile production.



CONSTRUCTION—Crushers like these from Allis-Chalmers process the enormous quantities of aggregate for the booming construction industry.

THERE IS much talk today about growth companies. Allis-Chalmers is one of them, supplying machinery for three basic industries—manufacturing, construction and power.

Therein lies an opportunity for you, since Allis-Chalmers builds many types of equipment.

. . . for a manufacturing industry that must increase output $3.5 billions by this time next year.

. . . for the construction industry that is destined to spend many billions of dollars on highways in the next ten years.

. . . for the electric power industry that will double its capacity by 1956.

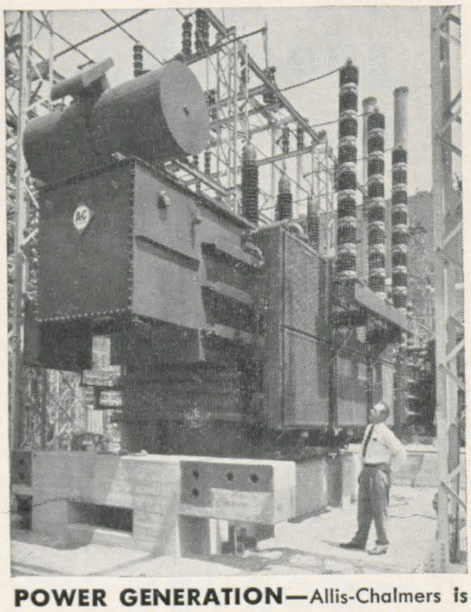
Here's what Allis-Chalmers offers to Young Engineers:

A graduate training course that has been a model for industry since 1904. You have access to many fields of engineering: Electric power, hydraulics, atomic energy, ore processing.

There are many *kinds* of work to try: Design engineering, application, research, manufacturing, sales. Over 90 training stations are available with expert guidance when you want it. Your future is as big as your ability can make it.

Or, if you have decided your field of interest and are well qualified, opportunities exist for direct assignments on our engineering staff.

In any case—learn more about Allis-Chalmers. Ask the A-C manager in your territory, or write direct to Allis-Chalmers, Graduate Training Section, Milwaukee 1, Wisconsin.



POWER GENERATION—Allis-Chalmers is helping meet growing power demand with equipment such as this 150,000 kva transformer.

A-4684

ALLIS-CHALMERS

A-C ALLIS-CHALMERS

Plants and Sales Offices all over the World

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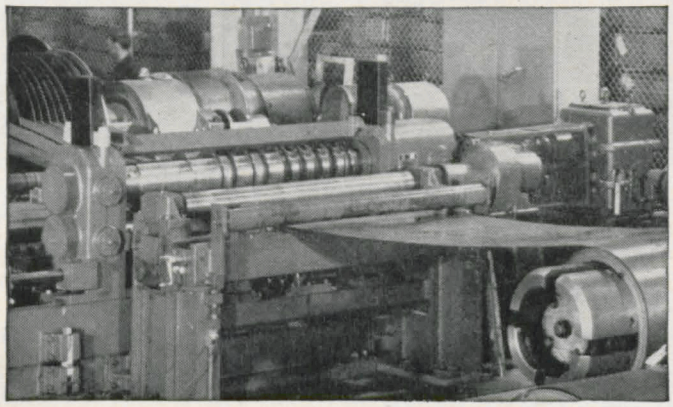
Faculty Advisor ..... PROF. WALTHER

Another page for **YOUR BEARING NOTEBOOK**

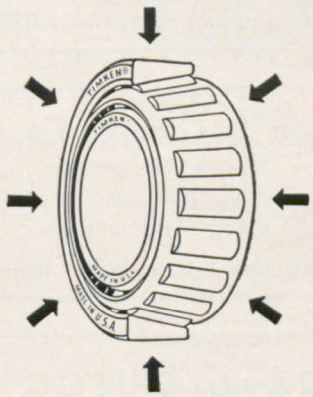
How to keep cutters aligned on high-speed coil slitter



Company engineers had the problem of keeping the cutters on this Stamco Coil Slitter operating accurately at high speeds. It meant keeping them in rigid, positive alignment. To take the heavy combination of radial and thrust loads required, they specified mounting the cutter arbors on Timken® tapered roller bearings.

Tapered design lets Timken® bearings take both radial and thrust loads

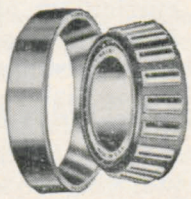
Because of their tapered design, Timken bearings can take radial or thrust loads or any combination. And because the load is carried along a full line of contact between rollers and races, Timken bearings have extra load-carrying capacity.



Want to learn more about bearings or job opportunities?

Some of the engineering problems you'll face after graduation will involve bearing applications. For help in learning more about bearings, write for the 270-page General Information Manual on Timken bearings. And for information about the excellent job opportunities at the Timken Company, write for a copy of "This is Timken". The Timken Roller Bearing Company, Canton 6, O.

TIMKEN
TRADE-MARK REG. U. S. PAT. OFF.
TAPERED ROLLER BEARINGS



NOT JUST A BALL ○ NOT JUST A ROLLER ⬭ THE TIMKEN TAPERED ROLLER ⬭
BEARING TAKES RADIAL ◐ AND THRUST —◎— LOADS OR ANY COMBINATION ✳

The Rare and Silent Breed

(Continued from page 9)

not be easily inserted into a formal curriculum without increasing the time element involved by at least two years. Writing, Economics, Speech, and other essentially non-engineering subjects are included in the curriculum at G.W. to give the engineering student a grounding from which to rise to better understanding of the various "cultural" fields, but, after the necessarily skimpy foundation, further knowledge must be acquired on the engineer's own time.

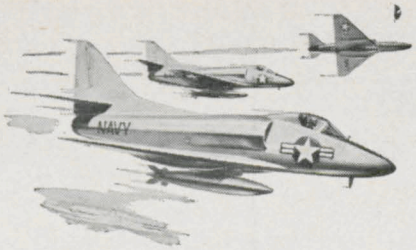
When an engineer graduates and applies for a position with industry, a research facility, or academic institution, his prospective employers look over his record and, if he meets their specific qualifications, he will be personally interviewed by an official of the organization. The men who conduct the personal interviews are not only interested in what the applicant has done, because that is mainly a matter of record. The interviewers are also interested in what the engineer can do in the future if given the opportunity to join the organization represented. If, in answer to the routine questions an interviewer must ask, the engineer expresses himself well and with conviction, the impression the company receives, through the eyes of the interviewer, will be much more favorable than if the questions were answered by slim, uninteresting statements.

The record an engineer compiles in college consists of many things, among which, the scholastic average plays a relatively minor part. The grades must be adequate to show that the formal education received by the individual was not treated lightly and was absorbed, but beyond that point all a healthy q.p.i. can prove is that the owner can understand what he reads. The remainder of the record consists of the school activities that the individual has engaged in during the college years.

Within the boundaries of G.W.'s extra-curricular activities exist formal parliamentary groups, such as the Engineers' Council and the Student Council; fifteen social fraternities; three publications, **Mecheleciv, The Hatchet,** and **The Cherry Tree;** drama and dance production groups, and dozens of small clubs interested in some definite phase of a certain field, such as the Canterbury Club, which studies and discusses literature at the time of Chaucer.

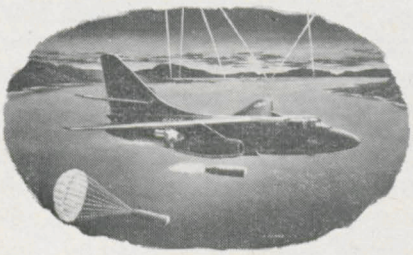
The non-engineering subjects included in the curriculum of the Engineering School are the foundation of the liberal education the man of science must have to succeed not only in life but in his profession; participation in the clubs, publications, and the myriad of activities provide him with a means to further his own understanding of all fields, which is, in essence, the key to adequate facility of expression.

F4D, "SKYRAY"— only carrier plane to hold official world's speed record



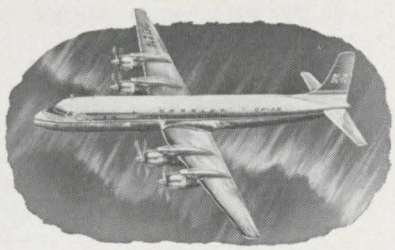
A4D, "SKYHAWK"— smallest, lightest atom-bomb carrier

RB-66 — speedy, versatile jet bomber



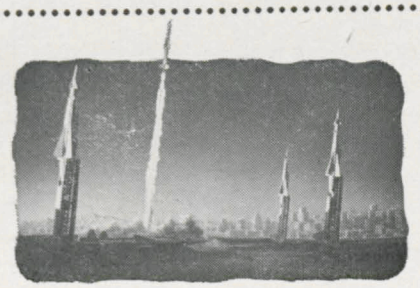
A3D, "SKYWARRIOR"— largest carrier-based bomber

C-124, "GLOBEMASTER"— world's largest production transport

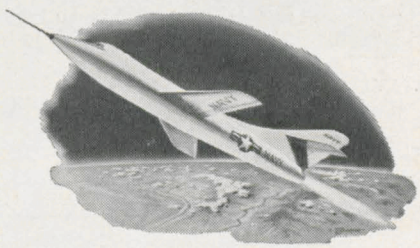


DC-7 "SEVEN SEAS"— America's finest, fastest airliner

Engineers: join this winning team!



"NIKE"— supersonic missile selected to protect our cities



D558-2, "SKYROCKET"— first airplane to fly twice the speed of sound

At DOUGLAS you'll be joining a company in which the three top executive officers are engineers...you'll be associated with men who have designed the key airplanes and missiles on the American scene today! Nothing increases an engineer's ability faster than working with other engineers of top calibre.

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3000 Ocean Park Blvd.... Santa Monica, California

COUNCIL MESSAGE

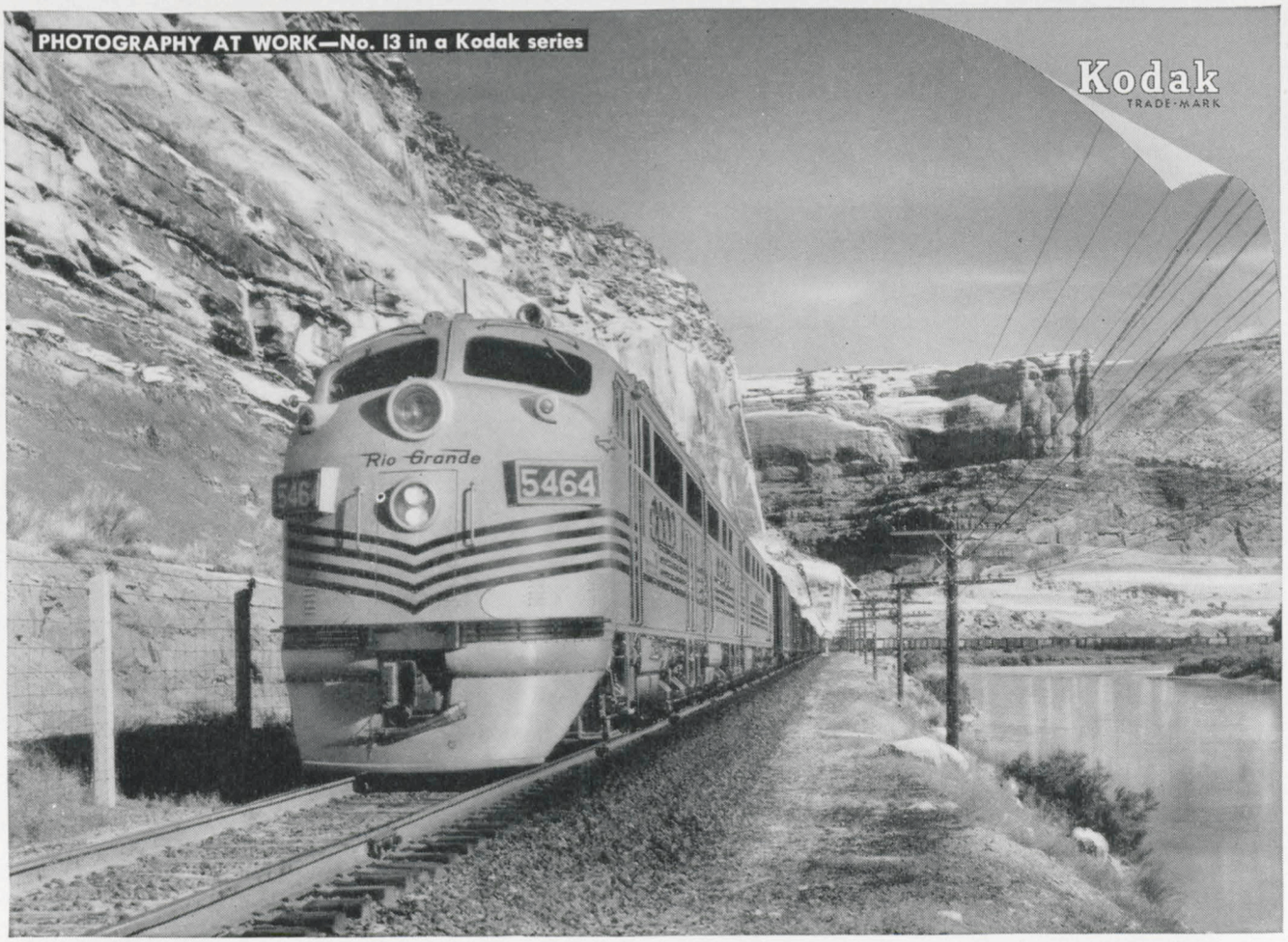
(Continued from page 7)

Due to the high emphasis put on scholastic standards at G.W., campus activities are underemphasized. Many students in the past came to school for a few hours to attend class and immediately returned to their separate ways of life, thereby losing one of the major benefits of a college education, a close kinship with their fellow students and their instructors. The only students they knew were those who sat next to them in class. The new student had no way of knowing that the rivalry between Mechanicals, Civils and Electricals was friendly. There was no one to tell them of the idiosyncrasies of the university. A new way of life is confusing under the best of conditons, and for new students just registering, the surface attitude of the older student made it even more confusing. On the surface it seemed the attitude was "every man for himself and the devil take the hindmost." The past tense was purposely used, for this is no longer the case due to much work and effort over the years on the part of both the faculty and the student organizations. The engineers now know one another. They work together and play together. There is rivalry, but it would not be much of a school without friendly rivalry to keep you interested and on your toes. We of the Engineers' Council like to believe we have a major part in this closeness of engineering students through the Engineers' Mixer, for this is the initial contact point. We are proud of this closeness, for when you get to know them there is not a finer group than the engineers at G.W.; so come to the Engineers' Mixer and meet the people who can help you when you're having difficulties, scholastically or otherwise, find out about the Davis-Hodgkins House and what is being done to improve it. There will be a short skit giving the lowdown on faculty (with the faculty present), all this plus food, and it's free for the taking. So remember the date, October 7; time, 8:15 p.m.; and the place, Lower Lounge of Lisner Auditorium, join us there and become a part of your university at the Engineers' Mixer. See you there.

IN OUR NEXT ISSUE

The regular departments of ALUM-VIEWS and NEWS AND VIEWS will be resumed.

There will be a progress report and a preview of TOMPKINS HALL.



Westbound Rio Grande freight in Ruby Canyon of Colorado River.

The freight rolls away an hour sooner

because photography cuts yard bookkeeping

The Denver and Rio Grande Western Railroad microfilms its waybills in minutes, cuts running schedules, saves costs in train idling time.

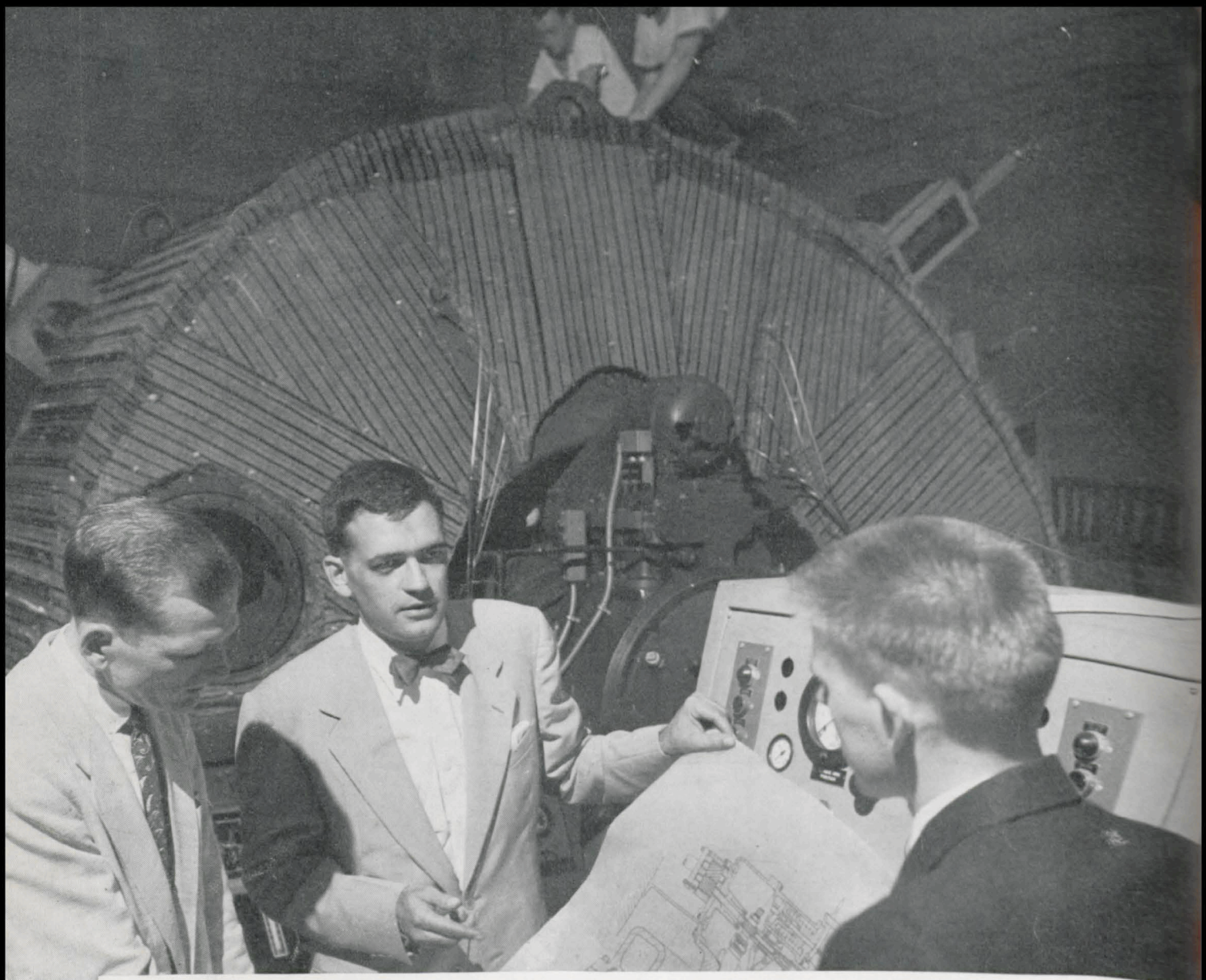
You don't find a Rio Grande freight idling at the terminal while waybills are copied by hand. Instead, Recordak Microfilming copies them. Then they're put aboard and the train is off in just about one-fifth the time it used to take, thus saving hours of valuable crew and train time. Then the wheel reports are made up from the films and teletyped ahead.

Railroading is but one of over a hundred types of businesses now saving money, time and space with microfilming. It is one of the fast growing and widely used ways photography works for industry.

Small businesses and large are finding that photography helps in simplifying routine procedures, in product design, in personnel relations. It improves production, saves time and cuts costs.

Graduates in the physical sciences and in engineering find photography an increasingly valuable tool in their new occupations. Its expanding use has also created many challenging opportunities at Kodak, especially in the development of large-scale chemical processes and the design of complex precision mechanical-electronic equipment. Whether you are a recent graduate or a qualified returning service man, if you are interested in these opportunities, write to Business & Technical Personnel Dept., Eastman Kodak Company, Rochester 4, N.Y.

Eastman Kodak Company, Rochester 4, N.Y.



G-E Development Engineering offers you careers with unlimited professional growth

In G.E.'s new Turbine Product Development Lab in Schenectady, Ed Freiburghouse, RPI '44, describes development engineering to students Bob Parker, Mississippi State '56, and Don Williams, Yale '55. Ed explains the extensive development of new bucket designs for steam turbines which lead the way to increased efficiency and operating economy.

Similar product development is being done in G.E.'s 132 plants in 101 cities and 24 states, offering you opportunity for professional development in many engineering channels, working with the more than 200,000 products G.E. makes for industry, the home, and defense.

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